

Templates - Min. Overlay

RWD CADD Support (10-1-2006)

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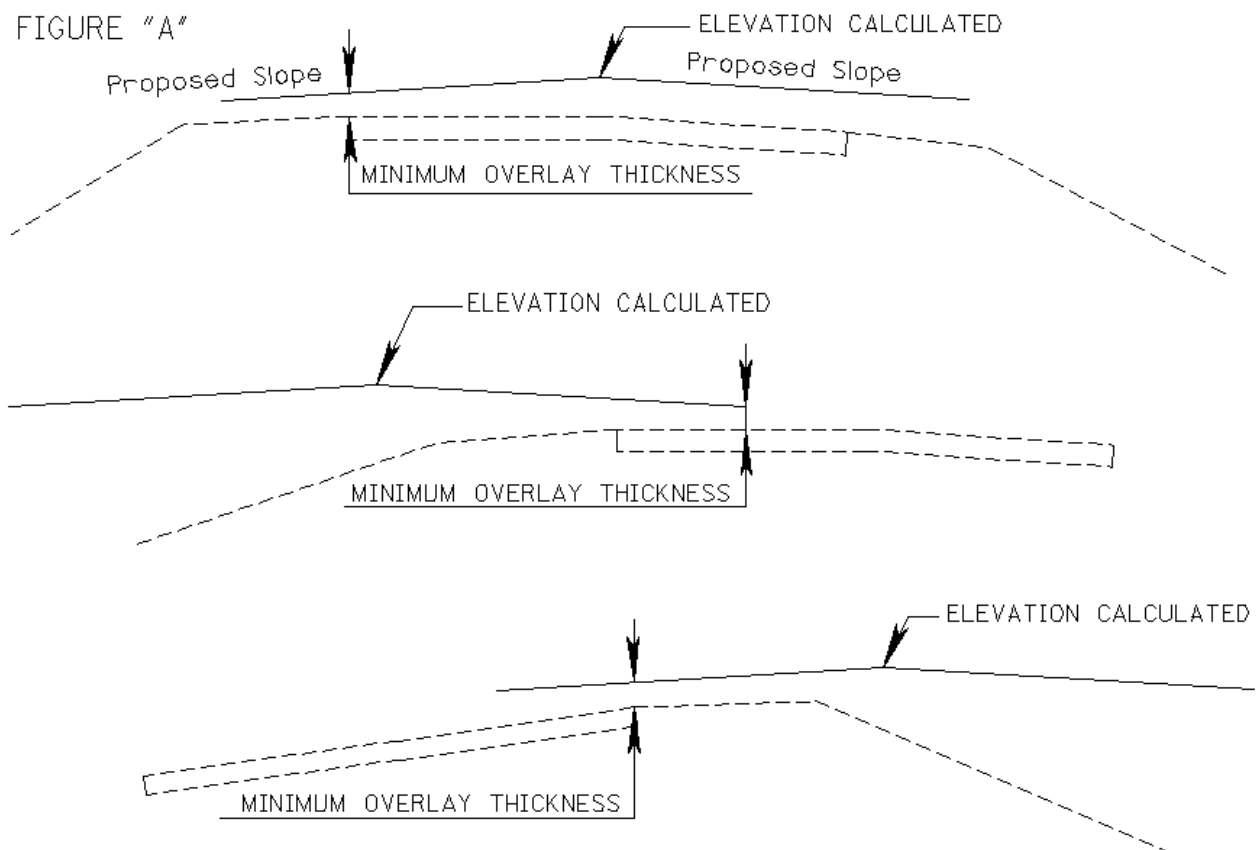
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Templates - Minimum Overlay

OVERVIEW

The following steps are the instructions for finding the critical point (elevation) of Existing X-Sections for a Minimum Overlay and creating a Proposed Profile from these Critical Points. This procedure should be used on all Overlay Jobs in which the designer is wanting to improve the Existing Pavement Slope and the Existing Grade (Normally URBAN JOBS).

See Figure "A" below for a Graphical Explanation of what the following instructions do:



STEPS

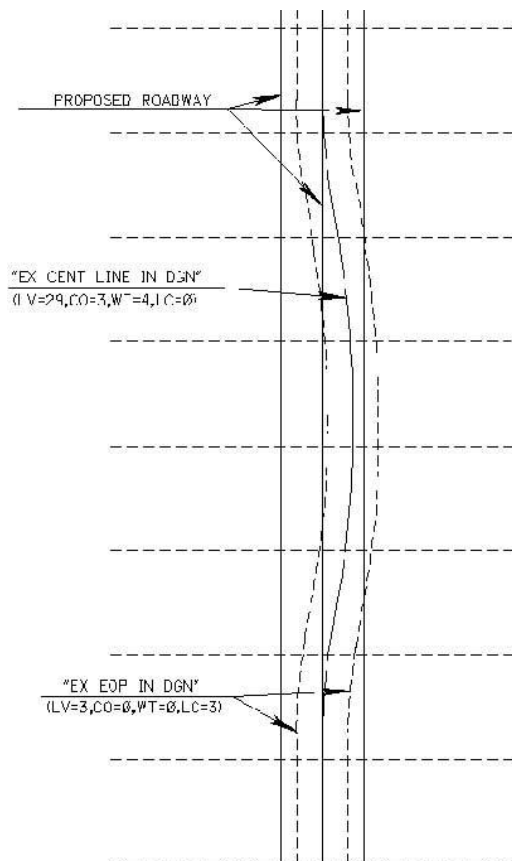
Calculate Superelevation

1. Create the PROPOSED SHAPES (Superelevation) for your alignment but use the EXISTING PROFILE for "shape cluster profile =". You use your existing profile because you do not have a proposed profile yet, these steps create the proposed profile. (Go to the Shape chapter for steps to calculate superelevation).

Draw Ex. E.P. and C.L. in DGN

2. Enter a Design file and construct the Centerline of your Existing Lanes on LVNAME=X_ALI_EX_CL (29) , Co=3, LC=0, and Wt=2. Then create your Existing Edge of Pavements on Level X_TRANS_EOP (3), Co= 0, LC= 3, and WT=0. These elements should represent the X-Section Shot Offsets to the Existing Edge of Pavements and the Existing Center Line as close as possible. **THE EXISTING EDGE OF PAVEMENT LINES IN THE PLAN VIEW DO NOT NEED TO BE AT OR SLIGHTLY INSIDE THE EP/SHOULDER BREAK ON THE X-SECTIONS.**

Below is what the Plan Design should look like:



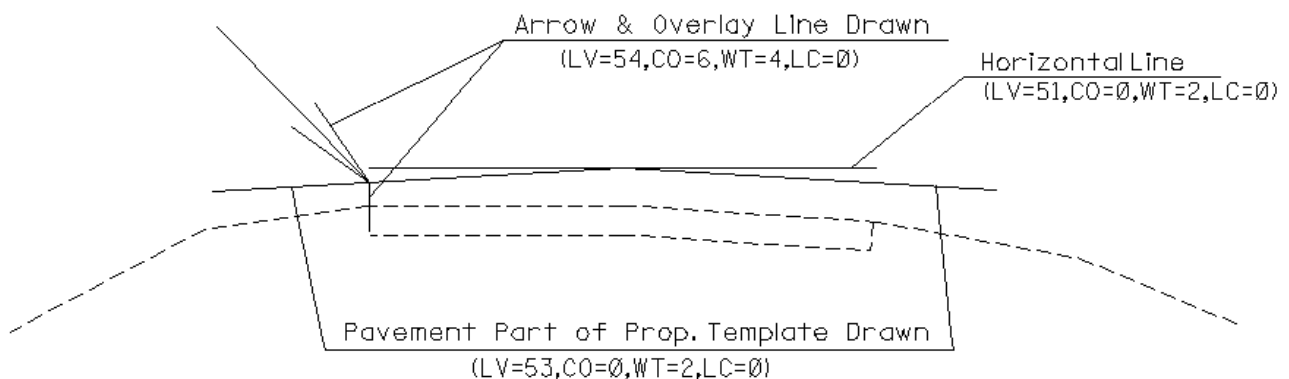
Run Proposed X-Section MCRPNT

3. Run GeoPak Road-> Project manager -> Proposed Cross-Sections and choose the Typical MCRPNT.
(See TEMPLATES Chapter in User's Guide for Steps.)

When ran, this Typical checks to see where the Control Point is and places a horizontal line across the X-Section which represents the Elevation required for a Minimum Overlay.

See Figure "B" below for all that is drawn:

FIGURE "B"



Cut Profile from Horizontal Line Placed in Previous Step

4. After this Proposed X-Section is ran, you need to cut a profile along your Baseline and of the Horizontal Line placed. Go to the profile chapter to see instructions for cutting a profile but you will use Road-> CrossSections -> Reports -> Profile Grade and set the Ex. & Prop. search symbology to LV=XS_M_MIN_OVERLAY, CO=8.

Plot Profile and place Bspline to smooth out profile.

The following steps are done to smooth out any Low or High Points in the Critical Point Profile cut in the step above. The object here is to establish a smooth profile as close to the Critical Point Profile as possible without going below the Critical Point Profile. (Note: You have an option to set a mathematical grade or a graphical grade. These steps discuss setting a graphical grade. Invoke Road-> Geometry -> Layout Profile VPI Based if you want to set a mathematical grade.)

5. PLOT EXISTING PROFILE

- Enter a DGN, invoke the D&C Manager.
- Choose Plan_Profile-> Profiles -> EX-PRO-20-CEL1
- Set the Label Scale to 20 and choose your Existing Profile.
- Set the dialog similar to the one below and tag "Draw Cell at XY" to place the Profile cell and then tag OK to plot the profile.

Profile

XP59

Beginning Station 409+00.00
Ending Station 424+75.00
Beginning Elevation 345.6540
Ending Elevation 298.6812
Maximum Elevation 345.6540
Minimum Elevation 298.6812

Horizontal Scale 20
Vertical Scale 5
Beginning Station 409+00.00
Ending Station 424+75.00
Strip Grade Increment 25

DP Station 409+00.00
DP Elevation 240.0000
DP X 23539.5859
DP Y 49792.9944

Profile Cell
PGL Chain I59
Draw Cell At XY
Identify Cell

OK Cancel

NOTE: You probably need to plot the profile on an exaggerated vertical cell to make working with the B-spline you're about to place easier. For example, you could use a Vertical scale of 1 instead of 5 as shown above.

6. PLOT PROPOSED PROFILE

- Close all dialogs except the D&C Manager and then Tag the PR-PRO-20-CEL1
- Turn off all checks and plot the Critical Point profile you cut in step 4. Don't plot the Profile Cell again.

7. PLACE BSPLINE (Smooth out Critical Point Profile)

- Invoke Microstation's Tools-> B-Spline Curves -> B-Spline Curves. Set the "Method" to "Through Points" and the "Input By" to "Pick Line String as shown below and then tag the critical point profile.

Create Curves

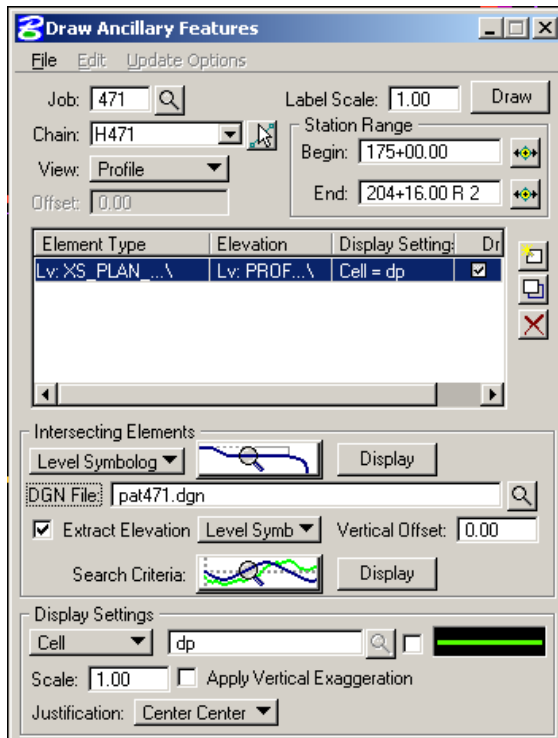
Place B-spline Curve

Method: Through Points
Input By: Pick Line String
Closure: Open
End Tangent: End Tangent

8. MODIFY BSPLINE

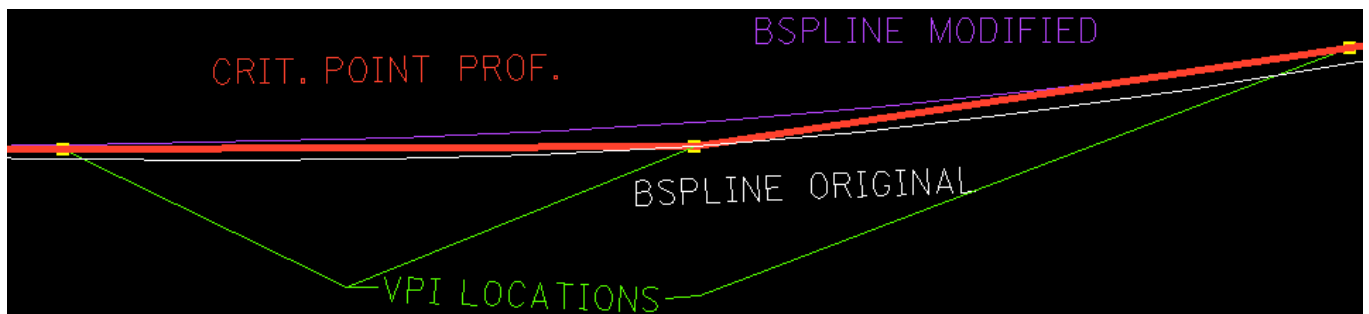
- You now need to be able to visually identify your VPI's on the profile. In some areas of your profile this is pretty evident but in some cases not. To do this you will draw points on your Critical Points profile with the dialog below.

Invoke Road -> X-Section -> Draw Ancillary to look at the Intersection Pattern Lines and draw the Cell DP on the Critical Point Profile at x-section locations.



Note: The Intersecting Elements Level Symbology is set to the Pattern Line Symbology and the Search Criteria Symbology is set to the Critical Point Profile Symbology

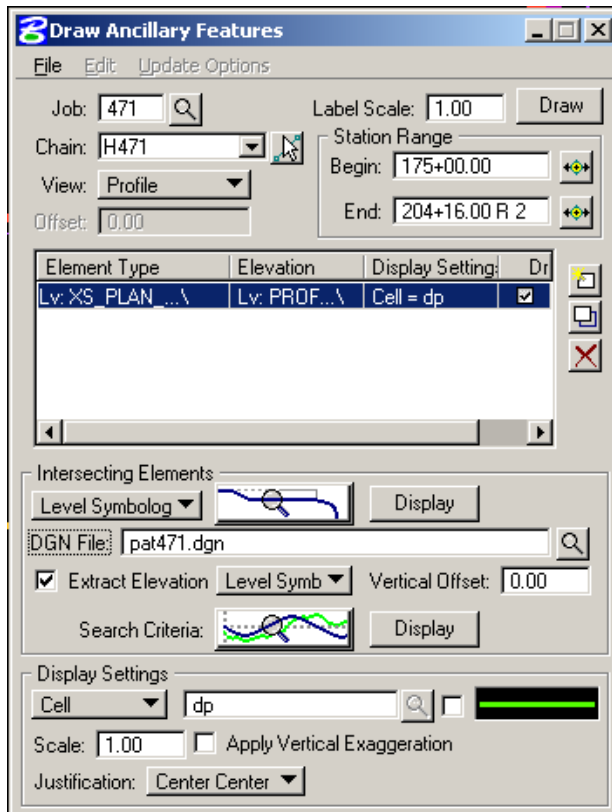
- b) You can now review the profile and use Microstations MODIFY command to smooth out any kinks.
Make sure the curve does not go below any of your Critical Points.



9. STORE SMOOTH PROFILE IN COGO

Now you need to store a profile which represents the Bspline curve. To do this you will place points along the Bspline at stations you have x-sections at and then run a 3PC to store this profile in COGO.

- DELETE THE POINTS PLACED IN STEP 8a.
- Invoke Road -> X-Section -> Draw Ancillary to look at the Intersection Pattern Lines and draw the Cell DP on the Bspline at x-section locations.



Note: The Intersecting Elements Level Symbology is set to the Pattern Line Symbology and the Search Criteria Symbology is set to the Bspline Symbology

b) Select the points just placed with Microstation's Element Selection and run the D&C 3PC ->Road-> Profile-> "Create Profile from Points"

10. After this profile is created and the designer is satisfied with the profile, enter the x-section design file.

Delete all elements placed when you ran the Minimum Overlay Typical.

11. The shapes will need to be Changed with the SHAPE MAKER DIALOG BOX so they have the new "PROPOSED PROFILE" attached to them or deleted and recreated using the PROPOSED PROFILE for "shape cluster profile = ".

12. Your Final Templates can now be created. Go to GeoPak Road-> Project Manager -> Proposed Cross-Sections and choose one of the Re-Construction Variable (Minimum) Overlay Typical. (See TEMPLATES on <http://rwdweb/geohlp.htm> for Steps)

Glossary of Terms

Index

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